

CLAIMS

1. Device allowing a pool opening to be exposed and/or concealed based on low profile covers constituted by roof components (I) juxtaposed in the direction of the length of the swimming pool and each consisting of a cover in a translucent material (100) and a rigid frame formed of at least two arches (210) placed in transverse planes and braced by longitudinal crosspieces (220) with two end crosspieces delimiting two longitudinal parallel edges (220a and 220b) to the roof component (I) and which rest on the longitudinal edges of the pool of said swimming pool defining a support surface (S), characterised in that it includes:
- 15       - storage means (600) located at one end of said pool and allowing said roof components (I) to be stored in a stacked way,
  - means of mobilising said roof components (I) allowing them to be displaced horizontally (arrow H) along the pool towards and/or away from said storage means (600),
  - 20       - stowing means (800) allowing the aforementioned roof components (I), disengaged from the pool, to be placed in the aforementioned storage means (600) and in a stacked position,
  - 25       - and means (900) of connecting said roof components (I) to each other, indissociable on the one hand in order to secure them to each other to form a roof component train (I) able to be displaced integrally and horizontally (arrow H) along said pool, and dissociable one from another on the
  - 30       other hand, in order to allow the vertical displacement

(arrow V) of said roof components (I) for the purposes of stacking in the aforementioned storage means (600).

2. Device according to claim 1, characterised in that the aforementioned storage means (600) of the roof components (I), located at one end of the pool, are presented in the form of a storage area corresponding to at least the ground surface of one roof component (I) and in which the roof components (I) are stacked up by being fed one underneath the other.

10 3. Device according to claim 1, characterised in that the aforementioned stowing means (800), allowing the aforementioned roof components to be placed in a stacked position inside the aforementioned storage means (600), are constituted by a support frame acting as a logic structure to at least two conveyors (810a and 810b) which, placed inside the aforementioned storage means (600) on either side of the stack of stored roof components (I), are able to grip and vertically displace (arrow V) inside the latter each roof component (I) in an upward movement to store them stacked one on top of the other and in a downward movement (reverse to that of the arrow V) to deposit them on the longitudinal edges of the pool (S) in order to juxtapose them one next to the other.

25 4. Device according to claim 1, characterised in that the aforementioned stowing means (800) are constituted by a support frame acting as a logic structure to at least two elevators which, placed in the storage area 600 on either side of the stack of stacked roof components (I), are able to grip and vertically displace (arrow V), in the storage area (600), each roof component (I) in an upward movement

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so as to store them stacked one on top of the other by feeding them one underneath the other and in a downward movement (reverse to that of the arrow V) so as to deposit them and place them on the longitudinal edges of the pool  
5 in order to juxtapose them one next to the other, and in that each elevator (830a) is constituted by two cranks (831a and 832a) the synchronised rotation of which ensures the vertical movement (arrow V) upwards of the single roof component (I) or of the already stacked roof components  
10 (I), the cranks engaging with the roof component present at storage area level so as to run it from a low position to a high position; this transfer from a low position to a high position allowing, through the action of said mobility means, the input of a new roof component (I) at the level  
15 of the stowing means which, by a rotary movement, deposit the raised up roof component onto the roof component placed beneath and engage to transfer the unit formed by the two stacked roof components (I) from a low position to a high position and so on until the input of the last roof  
20 component on which the others will rest.

5. Device according to claim 1, characterised in that the aforementioned stowing means (800) are constituted by two ramps (840a and 840b) which, placed in the storage area (600) on either side of the stack of stacked roof  
25 components (I), are able to vertically displace (arrow V) in the storage area (600) each roof component (I) in an upward movement to store them stacked one on top of the other by means of a displacement of said components on the ramps by feeding them one underneath the other and in a

downward movement (the reverse of that of the arrow V) so as to juxtapose them one next to the other.

6. Device according to claim 5, characterised in that these two ramps (840a and 840b) engage with pins projecting externally from the roof components (I) so as to make said components effect an upward movement and a tilt such that the stored roof components form an open angle opposite those coming to be supported on their lower surface by displacement imparted by said mobility means.

10 7. Device according to claim 1, characterised in that the aforementioned mobility means of said roof components (I) allowing them to be displaced horizontally along the pool towards and/or away from said storage means (600) are constituted:

15 - on the one hand, by running gear (710a) which, distributed over the width of the two parallel longitudinal edges (220a and 220b) of each roof component (I), ensures the free displacement (arrow H) of the edges (220a and 220b) along the edge (S), and therefore of the whole of the component (I) associated with it,

20 - and on the other hand, by at least one motor-drive roller (720a) which, placed at the input of the aforementioned storage means (600), is supported on the roof component (I) present in front of them so as to run it in a direction (arrow H) outwards from the pool to make it completely enter the aforementioned storage means (600) so as to disengage it from the pool which it was covering and to store it in the latter in a stacked way or, in the other direction inwards towards the pool (reverse direction to  
25 that of the arrow H), so as to discharge it from the  
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storage area (600) by pushing the other components (I) which, in the form of a train of juxtaposed components, will gradually cover the pool opening.

8. Device according to claim 1, characterised in that  
5 the aforementioned mobility means of said roof components (I) allowing them to be displaced horizontally along the pool towards and/or away from said storage means (600), include at least one horizontal drive endless strip (740a and 740b) which, placed at the input of the aforementioned  
10 storage means (600), engage with the roof component (I) present in front of them so as to run it in a direction (arrow H) outwards from the pool to make it completely enter the aforementioned storage means (600) so as to disengage it from the pool which it was covering and to  
15 store it in the latter in a stacked way or, in the other direction inwards towards the pool (reverse direction to that of the arrow H), so as to discharge it from the storage means (600) by pushing the other components (I) which, in the form of a train of juxtaposed components (I),  
20 will gradually cover the pool opening.

9. Device according to claim 1, characterised in that the aforementioned mobility means of said roof components (I) allowing them to be displaced horizontally along the pool towards and/or away from said storage means (600),  
25 include at least one translation mobilisation means (730a) of the pinion (731a)/rack (732a) type, the pinion (731a) being drawn into rotation by a fixed geared motor unit and the rack (732a) being integral with the longitudinal edge of the roof component (I).

10. Device according to claim 1, characterised in that each roof component is fitted with blocks inserted between each stacked roof component.

11. Device according to claim 1, characterised in that  
5 the aforementioned connection means (900) are constituted by the wings of the arches (210) which, placed to project in the extension of the panels (100) of the translucent material cover to ensure the sealed partial covering of the juxtaposed components (I) of the roof in the closed  
10 position, are fitted with a removable device for fastening the wings to the arch (210) of the contiguous component (I).

12. Device according to claim 1, allowing a pool opening to be exposed and/or concealed based on low profile  
15 covers constituted by juxtaposed roof components (I) of the type such that at least one of its longitudinal edges (220b) is articulated (arrow A) relative to the support edge (S) of the pool, an articulation relative to which it swivels in order to transfer from a closed position to a  
20 half-open position and vice versa, characterised in that the aforementioned connection means (900) are dissociable one from another to allow the vertical displacement (arrow V) of said roof components (I) for the purposes of stacking in the aforementioned storage means (600) and the free  
25 articulation (arrow A) of each component (I) relative to the support edge (S) of the pool.

13. Device according to claims 1, 11 and/or 12 and allowing a pool opening to be exposed and/or concealed based on roof components, of the type wherein the arch  
30 (210) of the covering component (I) is fitted with a wing

placed to project in the extension of the panels (100) to provide the sealed partial covering of the arch (210) of the juxtaposed covered component of the roof in the closed position, characterised in that each of the aforementioned  
5 connection means of two contiguous arches (210r) for the covered roof component and (210c) for the covering roof component of the roof components (I) is constituted by a U-shaped profile (211) which, intended to conform to the shape of the rectangular lower profiles (212r and 212c) of  
10 said two contiguous arches (210r and 210c), is fastened to the rectangular profile (212r) of the arch (210r) of the covered component such that the rectangular profile (212c) of the arch (210c) of the covering component can be housed and inserted in the U-shaped profile (211) during the  
15 movement of lowering the covering component into the closed position and conversely to disengage itself from said U-shaped profile (211) during the movement of lifting the same component towards the open position.

14. Device according to claim 13 characterised in that  
20 the upper part of the branch (211a) of the aforementioned U-shaped profile (211) not integral with the arch (210r) of the covered component is flared so as to facilitate the engagement with play of the rectangular lower profile (212c) of the arch (210c) of the covering component during  
25 its movement of lowering to a juxtaposed position.

15. Device according to claims 1, 2 and 3, characterised in that the two conveyors (810a and 810b) of the aforementioned stowing means (800) are each constituted by an endless strip drawn in rotation (arrows R) around two  
30 return cylinders in the upper and lower part of the

conveyors (810a and 810b) of the aforementioned storage means (600) and one of which is a drive cylinder to drive the endless strip around said cylinders.

16. Device according to claim 15 characterised in that  
5 the endless strips of the two conveyors (810a and 810b) of the aforementioned stowing means (800) are provided over their width with at least one chain of gripping mechanisms (811a and 811b) placed opposite each other for each endless strip (810a and 810b) so as to engage simultaneously with  
10 the two longitudinal parallel edges (220a and 220b) of each roof component (I) which is presented between them in the storage area (600).

17. Device according to claim 16 characterised in that the aforementioned gripping mechanisms (811a and 811b) are  
15 embodied in hooks which are, on the one hand, evenly spaced out by a pitch "p" one from the other, and, on the other hand, adapted so as to engage with corresponding fastening means (221a) on the longitudinal parallel edges (220a and 220b) of the roof components (I) to allow the latter to be  
20 fastened or unfastened through the rotation (arrow R) of the endless strips (810a and 810b) which ensures a linear vertical displacement (arrow V) of the hooks (811a and 811b) associated with it over the rectilinear portion of said endless strips.

25 18. Device according to claim 7 characterised in that the aforementioned mobility means include two motor-drive rollers (720a) to ensure the horizontal displacements (arrow H) of the roof components (I) by being supported on the two longitudinal edges (220a and 220b) of said roof  
30 components (I).

19. Device according to claim 18 characterised in that the axes of rotation (721a) of the aforementioned motor-drive rollers (720a) of the aforementioned mobility means are placed substantially inclined relative to the vertical and inwards towards the pool in such a way that the treads of said motor rollers are supported on the longitudinal edges (220a and 220b) of the roof components (I) while guiding the horizontal displacement (arrow H) of said components (I).

20. Device according to the set of claims 1, 2, 3, 7, 11, 12, 13, 14, 15, 16, 17, 18 and 19, characterised in that it includes an electronic automatic control system for the motors driving the drive rollers (720a) and the motor cylinders of the endless strips (810a and 810b) which, as a function of final position detectors and a programmed control activated by the user, allows the horizontal linear (arrow H) and vertical (arrow V) displacements of the roof components (I) to be orchestrated according to an operational cycle which consists in alternating the horizontal (arrow H) and vertical (arrow V) displacement times of the roof components (I) and according to pitches corresponding:

- on the one hand for the vertical displacement (arrow V) of the endless strips (810a and 810b) and of the components (I) associated with them, to the spacing pitch "p" of two hooks (811a or 811b) on one and the same chain,

- and on the other hand for the horizontal displacement (arrow H) of said components (I) activated by the motor-drive rollers (720a), to a pitch at least equal to the width of the roof components (I).

21. Device according to claim 1, characterised in that the storage means (600) are fitted with components that act as a mechanical stop unit (610) for the roof components (I) in their movement.

5        22. Device according to claim 4, characterised in that said cranks (831a and 832a) engage with blocks (240) forming cams and associated with each roof component (I).

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